

### 3.19 ENVIRONMENTAL JUSTICE

This section addresses Environmental Justice, or the possibility that impacts of a proposed action might disproportionately affect minority and low-income communities. The regulatory framework is first described, and demographic and economic data from Section 3.18, Socioeconomics, is examined to determine whether minority and low-income communities are potentially affected by the proposed Donlin Gold Project. Each alternative is then evaluated for possible disproportionate impacts to minority and low-income communities, and if an environmental justice concern would be raised. Project components are grouped for the analysis.

#### SYNOPSIS

##### Summary of Existing Conditions:

Most communities in the EIS Analysis Area are low-income and minority communities, as defined under CEQ guidelines and shown on Figure 3.18-1 (Section 3.18, Socioeconomics). This includes the Y-K region and the Native Village of Tyonek. These communities have greater proportions of low-income and minority populations as compared to those for the State of Alaska, and merit consideration of disproportionate impacts from the proposed Donlin Gold Project. Communication and outreach with these communities occurred throughout the scoping process and with government-to-government consultation with Tribes, since community outreach is an important part of the EIS process. Sections 1.5 and 1.6 of Chapter 1, Purpose and Need, discuss the extent of these outreach and consultation efforts. This outreach effort identified many concerns, which are catalogued in the Scoping Report. Many of the issues selected for further analysis in Section 1.8 (Chapter 1, Purpose and Need) reflect concerns raised by communities included in the environmental justice analysis.

##### Expected Effects:

Alternative 1: No Action – Under this alternative, the proposed project would not proceed. Socioeconomic impacts from Donlin Gold exploration activities, which were realized in the Y-K region over approximately the previous decade, would cease. Increased time and labor may be available for subsistence, and minor beneficial effects may occur for subsistence resources and subsistence access. Alternative 1 would cause a disproportionate adverse impact to minority and low-income communities of the Y-K region, raising an environmental justice concern.

Alternative 2: Alternative 2 would provide employment and income to the low-income and minority communities of the Y-K region. Employment and income generated by the project may be used to support subsistence activities and increase access and affordability to healthcare. Food security would improve. There could be potential adverse human health effects in the low-income and minority communities of the EIS Analysis Area from increases in rates of accidents and injury, exposure to potentially hazardous materials, and increases in

infectious diseases. There could also be both adverse and beneficial human health impacts from increases or decreases psychosocial stress and substance abuse. Crooked Creek residents would see continued displacement of subsistence uses of the mine site, and waterfowl users on the Bering Sea coast may perceive contamination of waterfowl accessing the tailings pond and pit lake. Subsistence fishing may be displaced or disrupted in the narrow reaches of the Kuskokwim River from project-related barging. Increased hunting activity in the vicinity of the Farewell Airstrip may also affect subsistence uses by McGrath, Nikolai, and Telida residents. The summary impact rating under Alternative 2 for minority and low-income communities in the Y-K region would be minor to moderate adverse for effects to human health and subsistence, moderate beneficial effects to human health, and major beneficial effects from increased employment and income. While there would be beneficial effects from the project, adverse impacts would disproportionately impact minority and low-income populations, and Alternative 2 would raise an environmental justice concern.

Other Alternatives: The summary effects of other alternatives for environmental justice would be similar to those of Alternative 2 for the other action alternatives, minor to moderate adverse for effects to human health and subsistence, moderate beneficial effects to human health, and major beneficial effects from increased employment and income. Adverse impacts for all alternatives would disproportionately affect minority and low-income communities, raising environmental justice concerns. Differences of note among alternatives include:

- *Alternative 3A (LNG-Powered Haul Trucks)* – would reduce fuel barging and impacts to subsistence fishing in the narrow reaches of the Kuskokwim River. There would be small decreases in total project employment and expenditures. There would be decreased potential for water transport injury, and a reduction of hazardous contaminants in the air and surface water.
- *Alternative 3B (Diesel Pipeline)* – would eliminate diesel fuel barging after the construction phase and there would be smaller increases in employment and expenditures due to reduced barging requirements. The expansion of the existing Tyonek North Foreland Barge Facility would create job opportunities in Tyonek. There would be low intensity adverse impacts to subsistence harvest of marine mammals near Tyonek, decreased potential for water transport injury, and a reduction of hazardous contaminants in the air and water.
- *Alternative 4 (Birch Tree Crossing Port)* – would reduce river barging distance and require construction of a longer mine access road to the upriver barge landing. There would be slight increases in employment and expenditures for a longer road. Impacts to subsistence fishing would be reduced in minority and low-income communities in the narrow reaches of the Kuskokwim River above Birch Tree Crossing. There may be small increases in impacts to subsistence from the access road, such as displacement of access and habitat for moose and black bear. There would be reduced risks of water transportation injuries, but increased risks of surface transportation injuries.

- *Alternative 6A (Dalzell Gorge Route)* – would require larger workforce and higher expenditures due to more horizontal directional drilling than Alternative 2. Enhanced economic benefits may facilitate subsistence activities and healthcare access.

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### 3.19.1 REGULATORY ENVIRONMENT

Executive Order 12898 (1994) requires federal agencies to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on low-income populations and minority communities, including Alaska Native populations.

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*“In order to develop a future of environmental justice, we must consider and account for the past.”* (National Environmental Justice Advisory Council [NEJAC] 2013)

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“Minority community” and “low-income” are defined for the purposes of analyzing the effects of the agencies’ actions on potentially affected populations. A minority is any individual self-identified as American Indian, Alaska Native, Asian or Pacific Islander, African American, or Hispanic (of any race). A minority community is defined for this project as a community with a majority (50 percent or greater) minority population. This threshold is specified by CEQ’s 1997 Environmental Justice Guidance under National Environmental Policy Act.<sup>1</sup> A low-income population is a community or group with a median household income at or below the U.S. Department of Health and Human Services poverty guidelines.<sup>2</sup>

“Disproportionate high and adverse human health or environmental effects” are defined when the health effects of an action are significant or above generally accepted norms (e.g., infirmity, illness, or death); the risk or rate of hazard exposure is significant and exceeds the rate to the general population; or the population is exposed to cumulative or multiple adverse exposures to environmental hazards.

In addition, impacts to Alaska Native populations may be different from impacts on the general population due to a community’s distinct cultural practices (CEQ 1997). Therefore, agencies would consider impacts to subsistence as a component of the environmental justice analysis.

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<sup>1</sup> Low-income populations and minority communities are defined as any readily identifiable group of minority or low-income persons who live in geographic proximity and their population percentage is meaningfully greater than the low-income/minority population percentage in an appropriate geographic unit of analysis (CEQ 1997).

<sup>2</sup> Alternatively, low-income populations can be identified with poverty data from the U.S. Census Bureau. To determine who is considered low-income, the U.S. Census Bureau uses a set of monetary income thresholds that vary by family size and composition. Poverty thresholds do not vary geographically; however, they are updated annually for inflation using the consumer price index. Poverty guidelines are an administrative tool that determines financial eligibility for certain programs and are comparable to the poverty thresholds calculated by the U.S. Census Bureau for statistical purposes.

### 3.19.2 AFFECTED ENVIRONMENT

The proposed project's potentially impacted population includes those who live, work, subsist, or recreate within the vicinity of the proposed Project Area, as well as shareholders in the Calista, Doyon, and CIRI Alaska Native regional corporations. The mine site is within the Yukon-Kuskokwim (Y-K) region. This region includes 56 villages within the Bethel Census Area, the Kusilvak<sup>3</sup> Census Area, and the Yukon-Koyukuk Census Area, as well as the Native Village of Tyonek, Beluga, and Unalaska. These regions are described in Section 3.18, Socioeconomics. The ethnicity and poverty characteristics for the EIS Analysis Area are displayed in Table 3.19-2. Figure 3.18-1 and 3.18-2 in Section 3.18, Socioeconomics, map the Y-K region and Kuskokwim River communities. Figure 3.19-1 shows minority and low-income communities, which includes the communities of the Y-K region. Statistics for the State of Alaska are provided as a reference population.

#### 3.19.2.1 MINORITY POPULATION STATUS

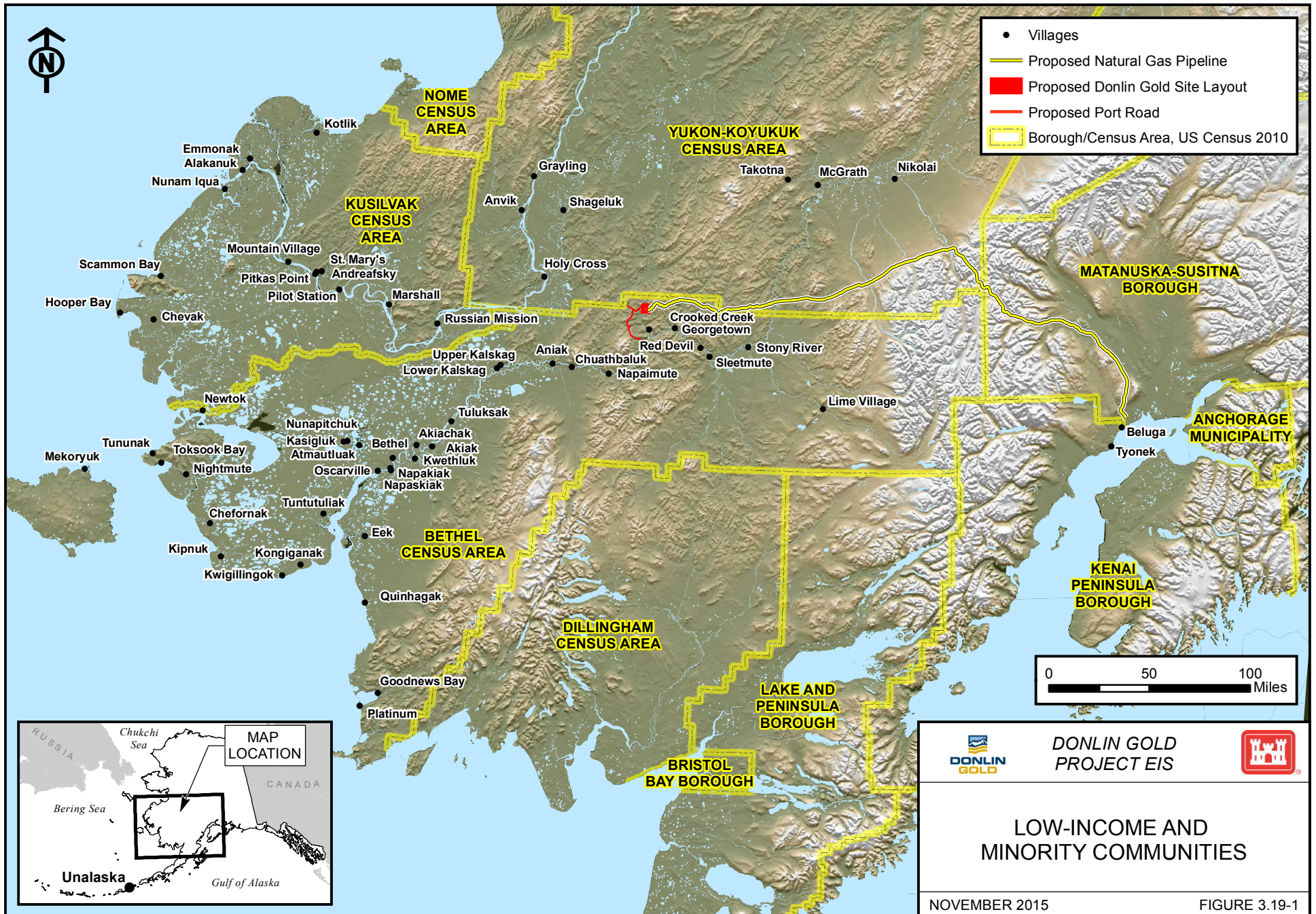
The population that would be affected by the mine site infrastructure and employment, transportation infrastructure, and a portion of the pipeline lives in the Bethel, Yukon-Koyukuk, and Kusilvak census areas. In the 2010 Census, the Bethel Census Area population was 89 percent minority (87 percent Alaska Native). The Yukon-Koyukuk Census Area population was 78 percent minority (71 percent Alaska Native), and the Kusilvak Census Area population was 97 percent minority (97 percent Alaska Native). In contrast, the State of Alaska population was 33 percent minority (19.5 Alaska Native) (USCB 2010). Anchorage, the Kenai Peninsula Borough, and the Matanuska-Susitna Borough (MSB) do not have minority population status. The Native Village of Tyonek within the Kenai Peninsula Borough is a predominantly Alaska Native community. Section 3.18, Socioeconomics, provides more detailed demographic information about the populations within the EIS Analysis Area. Table 3.19-1 provides a brief overview of ethnicity characteristics by region or census area within in the EIS Analysis Area.

Table 3.19-2 displays the percent Alaska Native populations and percent of persons below poverty level at the community level for the 56 communities of the Y-K region. The percent American Indian and Alaska Native alone or in combination with one or more other races is taken from the 2010 Census. The 2010 Census did not record persons below poverty level at the community scale. While having a wide range of a margin of error, the best available estimates for poverty at the community scale are the Census 2009 to 2013 American Community Survey 5-Year Estimates. Data are included for the communities of the Y-K region where available from these two sources, and the State of Alaska is provided as a reference population.

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<sup>3</sup> As footnoted in Section 3.18 Socioeconomics, the Kusilvak Census Area is formerly known as the Wade Hampton Census Area. The name change was effective July 1, 2015, and is noted on the U.S. Census Bureau website at: <http://www.census.gov/geo/reference/county-changes.html>. There was only a change in name, and there was no change to the boundary of the census area.





In addition, the Native Village of Tyonek is considered a minority and low-income community in the EIS Analysis Area, but is located outside of the Y-K region. In the Native Village of Tyonek, 89 percent of the population is American Indian and Alaska Native alone or in combination with one or more other races (USCB 2010), and an estimated 32.8 percent of the population is below poverty level (USCB 2013b). The community of Beluga is also located outside of the Y-K region in the Kenai Peninsula Borough. It is not a minority community, but is a low-income community. Unalaska is outside of the Y-K region in the Aleutians West Census Area. Unalaska has a high proportion of Asian residents, and is a minority community. Unalaska is not considered a low-income community. The Native Village of Tyonek, Beluga, and Unalaska are included in Table 3.19-2.

Table 3.19-1: Ethnicity Characteristics of the EIS Analysis Area

	White <sup>2</sup>	Black or African American <sup>3</sup>	Alaska Native and American Indian <sup>3</sup>	Asian <sup>3</sup>	Native Hawaiian and Other Pacific Islander <sup>3</sup>	Some Other Race <sup>2</sup>	Hispanic or Latino <sup>4</sup>	Total Minority <sup>5</sup>	Census Area or Borough
	Percent of Total Population								
Y-K region <sup>1</sup>	4.3	0.3	95.3	0.3	0.1	0.1	0.3	95.6	NA
Yukon-Koyukuk Census Area	22.8	0.3	70.9	0.3	1.2	5.5	1.3	77.2	22.9
Bethel Census Area	10.9	0.8	86.7	1.5	0.3	0.4	1.1	89.1	22.6
Kusilvak Census Area <sup>6</sup>	2.7	0.3	97.0	0.4	0.1	0.1	0.1	97.3	34.1
City of Bethel	22.7	1.8	71.3	3.7	0.7	0.8	2.2	77.2	NA
City of Unalaska	33.7	7.5	8.1	35.5	3.1	8.9	15.2	66.2	NA
Kuskokwim River Communities <sup>1</sup>	4.2	0.3	95.5	0.2	0.1	0.1	0.3	95.8	NA
Kenai Peninsula Borough	82.8	1.0	11.6	2.1	0.5	0.9	3.0	17.0	10.7
Native Village of Tyonek	4.1	1.2	94.7	0.0	2.9	0.0	5.3	95.9	NA
Matanuska-Susitna Borough	82.8	1.8	10.1	2.4	0.6	1.2	3.7	17.1	10.9
Municipality of Anchorage	62.6	7.7	12.4	10.3	2.8	3.1	7.6	37.2	9.6
State of Alaska	64.1	4.7	19.5	7.1	1.6	2.1	5.5	35.7	11.0

Notes:

1 Excluding City of Bethel. (Refer to Section 3.18, Socioeconomics for further definitions of this region).

2 Alone, non-Hispanic.

3 Alone or in combination with one or more other races.

4 Of any race.

5 Minority population = Total population – (White, non-Hispanic population + Some Other Race Alone, non-Hispanic population).

6 As footnoted in Section 3.18, Socioeconomics, the Kusilvak Census Area is formerly known as the Wade Hampton Census Area. The name change was effective July 1, 2015, and is noted on the U.S. Census Bureau website at: <http://www.census.gov/geo/reference/county-changes.html>. There was only a change in name, and there was no change to the boundary of the census area.

Source: USCB 2013a, 2013b

The communities of the Y-K region, the Native Village of Tyonek, and Unalaska meet the minority status definition (Table 3.19-2). This factor alone requires an environmental justice analysis under Executive Order 12898 because the affected communities are predominantly Alaska Native.

Table 3.19-2: Ethnicity and Poverty Level of the EIS Analysis Area, by Community

Community	Census Area or Borough	Incorporation Type	Percent American Indian and Alaska Native Alone or Combo <sup>1</sup>	Percent Persons Below Poverty Level <sup>2</sup>
Alakanuk	Kusilvak Census Area	City	95.1	38.4
Emmonak	Kusilvak Census Area	City	96.3	29.4
Kotlik	Kusilvak Census Area	City	97.1	28.1
Nunam Iqua	Kusilvak Census Area	City	91.6	16.3
Mountain Village	Kusilvak Census Area	City	91.7	22.2
Saint Mary's	Kusilvak Census Area	City	91.9	18.0
Pitkas Point	Kusilvak Census Area	Unincorporated Census Designated Place	97.3	20.8
Pilot Station	Kusilvak Census Area	City	98.1	26.9
Marshall	Kusilvak Census Area	City	94.8	17.8
Russian Mission	Kusilvak Census Area	City	95.9	33.7
Scammon Bay	Kusilvak Census Area	City	99.4	43.7
Hooper Bay	Kusilvak Census Area	City	94.7	41.2
Chevak	Kusilvak Census Area	City	94.7	35.7
Nikolai	Yukon-Koyukuk Census Area	City	82.9	20.6
McGrath	Yukon-Koyukuk Census Area	City	46.0	14.5
Takotna	Yukon-Koyukuk Census Area	Unincorporated Census Designated Place	37.9	0.0
Grayling	Yukon-Koyukuk Census Area	City	87.4	38.5
Anvik	Yukon-Koyukuk Census Area	City	93.2	30.3
Shageluk	Yukon-Koyukuk Census Area	City	90.9	21.6
Holy Cross	Yukon-Koyukuk Census Area	City	91.9	22.6
Bethel	Bethel Census Area	City	66.2	12.2
Mekoryuk	Bethel Census Area	City	93.4	18.9
Toksook Bay	Bethel Census Area	City	92.2	9.8



Table 3.19-2: Ethnicity and Poverty Level of the EIS Analysis Area, by Community

Community	Census Area or Borough	Incorporation Type	Percent American Indian and Alaska Native Alone or Combo <sup>1</sup>	Percent Persons Below Poverty Level <sup>2</sup>
Tununak	Bethel Census Area	Unincorporated Census Designated Place	94.6	40.8
Nightmute	Bethel Census Area	City	94.7	22.4
Newtok	Bethel Census Area	Unincorporated Census Designated Place	96.1	30.1
Nunapitchuk	Bethel Census Area	City	95.8	30.2
Atmautluak	Bethel Census Area	Unincorporated Census Designated Place	97.8	20.3
Napaskiak	Bethel Census Area	City	96.6	22.8
Napakiak	Bethel Census Area	City	97.2	42.9
Tuntutuliak	Bethel Census Area	Unincorporated Census Designated Place	95.9	36.2
Chefornak	Bethel Census Area	City	95.7	16.6
Kipnuk	Bethel Census Area	Unincorporated Census Designated Place	97.7	25.0
Kongiganak	Bethel Census Area	Unincorporated Census Designated Place	95.8	26.2
Kwigillingok	Bethel Census Area	Unincorporated Census Designated Place	95.1	33.3
Quinhagak	Bethel Census Area	City	93.7	28.9
Goodnews Bay	Bethel Census Area	City	94.7	44.6
Platinum	Bethel Census Area	City	89.1	46.8
Oscarville	Bethel Census Area	Unincorporated Census Designated Place	91.8	33.9
Kasigluk	Bethel Census Area	Unincorporated Census Designated Place	94.8	39.0
Akiachak	Bethel Census Area	Unincorporated Census Designated Place	95.1	23.9
Akiak	Bethel Census Area	City	92.9	28.8
Kwethluk	Bethel Census Area	City	93.9	22.3
Eek	Bethel Census Area	City	97.6	22.9
Tuluksak	Bethel Census Area	Unincorporated Census Designated Place	95.0	60.8
Lower Kalskag	Bethel Census Area	City	92.6	32.7
Upper Kalskag	Bethel Census Area	City	82.1	24.7
Aniak	Bethel Census Area	City	72.2	16.6



Table 3.19-2: Ethnicity and Poverty Level of the EIS Analysis Area, by Community

Community	Census Area or Borough	Incorporation Type	Percent American Indian and Alaska Native Alone or Combo <sup>1</sup>	Percent Persons Below Poverty Level <sup>2</sup>
Chuathbaluk	Bethel Census Area	City	88.9	40.8
Napaimute	Bethel Census Area	Unincorporated Census Designated Place	N/A	N/A
Crooked Creek	Bethel Census Area	Unincorporated Census Designated Place	85.1	19.2
Red Devil	Bethel Census Area	Unincorporated Census Designated Place	57.6	21.9
Georgetown	Bethel Census Area	Unincorporated Census Designated Place	N/A	N/A
Sleetmute	Bethel Census Area	Unincorporated Census Designated Place	76.7	26.8
Stony River	Bethel Census Area	Unincorporated Census Designated Place	84.8	88.7
Lime Village	Bethel Census Area	Unincorporated Census Designated Place	93.3	23.8
Native Village of Tyonek	Kenai Peninsula Borough	Unincorporated Census Designated Place	89.0	32.8
Beluga	Kenai Peninsula Borough	Unincorporated Census Designated Place	10.0	42.9
Unalaska	Aleutians West Census Area	City	6.1 <sup>c</sup>	8.6
State of Alaska	Reference Population	State	19.5	11.0

Notes:

1 Source of the data for this column is the 2010 Census, where statistics are available at the community level.

2 Source of the data for this column is the 2010 Census Bureau's 2009-2013 American Community Survey 5-Year Estimates, where available at the community level.

3 While Unalaska does not have a large American Indian and Alaska Native population, it has a 66.2 percent minority population largely due to the high proportion of Asian community members as shown in Table 3.19-1.

Source: USCB 2010, 2013a.

### 3.19.2.2 LOW-INCOME POPULATION STATUS

The October 2013 issue of *Alaska Economic Trends* focused on the Y-K Delta region, which was defined as the Bethel and Kusilvak census areas. It explains that the Y-K Delta resembles other rural areas in the state in several ways, but economically it is the most challenged area.

Rates of poverty and unemployment in the Y-K region (described in Section 3.18, Socioeconomic), excluding Bethel, are among the highest in the nation. Similarly, average wages per job and per capita incomes are among the lowest. The Kusilvak Census Area's per capita income was \$22,000 in 2011 (ADOL 2013f) with 30 percent of the population below the poverty

level (USCB 2011). This is one of the lowest census area per capita incomes in Alaska, and is less than half the statewide average of \$45,700. The Bethel Census Area ranked sixth-lowest at \$32,100 (ADOL 2013f) with 20 percent of residents below poverty thresholds (USCB 2011). The Yukon-Koyukuk Census Area per capita income was \$20,000 with 23 percent below poverty, compared to a statewide average of approximately 10 percent.

Income and unemployment statistics are not consistently available for the Kuskokwim River communities. The 2010 Census did not record persons below poverty level at the community scale. While having a wide range of a margin of error, the best available estimates for poverty at the community scale are the Census 2009 to 2013 American Community Survey 5-Year Estimates, as shown in Table 3.19-2. Based on the census area data, it is likely that unemployment rates in these communities are among the highest in the state and per capita incomes are among the lowest.

The communities of the Y-K region, the Native Village of Tyonek, and Beluga meet the definition of low-income populations. Thus, an environmental justice analysis is required for the proposed Donlin Gold Project.

Table 3.19-3: Minority and Low-Income Evaluations for Determining Communities with Environmental Justice Concerns

	Total Minority <sup>2</sup>	Poverty Rates in excess of Poverty Rate for the State of Alaska	Meets Minority or Low-Income Definitions for Environmental Justice
Y-K region <sup>1</sup>	Yes	Yes	Yes
Yukon-Koyukuk Census Area	Yes	Yes	Yes
Bethel Census Area	Yes	Yes	Yes
Kusilvak Census Area	Yes	Yes	Yes
City of Bethel	Yes	Yes	Yes
City of Unalaska	Yes	No	Yes
Kuskokwim River Communities <sup>1</sup>	Yes	Yes	Yes
Kenai Peninsula Borough	No	No	No
Native Village of Tyonek	Yes	Yes	Yes
Beluga	No	Yes	Yes
Matanuska-Susitna Borough	No	No	No
Municipality of Anchorage	No	No	No
State of Alaska	No	No	No

Notes:

1 Excluding City of Bethel. (Refer to Section 3.18, Socioeconomics for further definitions of this region).

2 Minority population = Total population – (White, non-Hispanic population + Some Other Race Alone, non-Hispanic population).

Source: USCB 2013a, 2013b.

### 3.19.2.3 RELATIONSHIP TO SUBSISTENCE, HEALTH, AND ENVIRONMENT

Environmental justice analysis is an intersection between several resource topics. The relationship includes subsistence users, subsistence resources, environmental impacts, socioeconomic impacts, and community health. The biological and physical environment intersect with social structures to impact low-income and minority communities. Section 3.19.3 examines the differences in effect among alternatives because the affected population of each action alternative is generally the same.

### 3.19.2.4 COMMUNICATION AND OUTREACH

A thorough scoping process, government-to-government consultation with Tribes, and community outreach has been a major part of the EIS process. Sections 1.5 and 1.6 of Chapter 1, Purpose and Need, discuss the extent of these outreach and consultation efforts in detail. This outreach effort identified many concerns, which are catalogued in the Scoping Report. Many of the issues selected for further analysis in Section 1.8 (Chapter 1, Purpose and Need) reflect concerns raised by communities represented in the environmental justice analysis.

In addition to scoping and government-to-government consultation processes, additional outreach was conducted with communities in the region. Community outreach included two workshops to listen to Traditional Ecological Knowledge (TEK) shared by elders and community leaders. TEK is a detailed and dynamic body of wisdom about the local environment based on the traditions of living from the land and waters. In November 2013, the first TEK workshop included 13 local experts from Stony River to Tuntutuliak. They met with agency representatives in Aniak to share stories and offer insights from TEK and subsistence. The second TEK workshop was held in March 2014, when leaders from 13 communities convened with agency representatives for a dialogue about the current status of subsistence fish and wildlife and potential impacts from the Donlin Gold Project.

Another outreach effort included an interview project, focusing on the impacts to families and communities from the “boom and bust” at the historic Red Devil Mine. There are many differences between historic mine engineering and regulatory oversight compared to the modern setting of the proposed Donlin Gold Project. However, the experiences of families from the Red Devil Mine era identified topics of local concern to address in the development of the Donlin Gold Project. Refer to Section 3.20.1.1.5, Cultural Resources, for additional description of the outreach effort and issues identified.

Additional outreach also included interviews exploring potential socio-cultural impacts to subsistence from the proposed Donlin Gold Mine in eight communities: Aniak, Bethel, Chuathbaluk, Crooked Creek, Lower Kalskag, Sleetmute, Stony River, and Upper Kalskag. These interviews identified issues regarding the future of subsistence. In 2015, 26 interviews were conducted with tribal, municipal and regional service organization leaders in the same eight communities concerning current leadership strengths and challenges, and well as future challenges to their governance capacities that may arise of the proposed Donlin Gold Project were to go forward.

The combination of the additional outreach efforts with the scoping and government-to-government consultation processes has provided ongoing opportunities for local residents to engage in the EIS process.

#### 3.19.2.5 CLIMATE CHANGE

Climate change effects on the atmosphere, water resources, permafrost, vegetation, wildlife, and subsistence may have ramifications for low-income and minority populations in the EIS Analysis Area. The EPA's Plan EJ 2014 Progress Report noted the increased vulnerability and existing disproportionate impact for low-income and minority populations to climate change (EPA 2014i). The President's Climate Action Plan (Executive Office of the President 2013) notes an initiative to assist tribal communities on climate change preparedness.

Permafrost melt may increase scour, aufeis or glaciation, subsidence, and erosion. These processes add costs for maintaining housing and community facilities, which may stretch both individual and public budgets for low-income communities. Indirectly, erosion or ground subsidence may damage community sanitation facilities, which could increase risks for infectious disease and cause other adverse human health effects in low-income and minority communities. Stress caused by worries and adaptations for climate change may also indirectly have an adverse impact to rates of non-communicable and chronic health conditions in low-income and minority communities. This marginal increase in stress may have more impact to populations with existing anxiety over socioeconomic conditions.

Climate change may have contributed to recent declines in moose in GMU 19A and Chinook salmon populations in the Kuskokwim River. These declines may affect food security, nutrition, and cultural practices tied to subsistence in low-income and minority communities in the EIS Analysis Area. For the Kuskokwim River area, the ANTHC Local Observer Network includes observations of recent low snow years, thin river ice, and open water, which may be related to climate changes. Less predictable ice on the Kuskokwim River particularly impacts the low-income and minority populations that depend upon frozen waterways for transportation, and who may not have the means for other forms of travel (such as more expensive flights).

#### 3.19.3 ENVIRONMENTAL CONSEQUENCES

As described in Section 3.19.1, Executive Order 12898 requires federal agencies to identify and address "disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations," including Alaska Native communities. Much of the population within the EIS Analysis Area, including the Bethel, Kusilvak, and Yukon-Koyukuk census areas, has a high proportion of Alaska Natives and incomes lower than the rest of the state. The purpose of this section is to summarize potential impacts to minority and low-income communities, including changes to socioeconomics, human health, and subsistence resulting from the implementation of the alternatives, and to conclude whether there may be disproportionate adverse effects to minority or low-income communities triggering an environmental justice concern.

Potential impacts to minority and low-income communities were determined by assessing the magnitude (intensity), duration, geographic extent, and context of anticipated impacts using specific impact criteria. Table 3.19-4 provides narrative descriptions of the impact criteria. Scales are provided for each of the major impact types to be analyzed in this section. Environmental justice analysis is the intersection of several resources, including socioeconomic, subsistence, and health. Sections 3.18, Socioeconomics; 3.21, Subsistence; and 3.22, Human Health, describe impacts to the entire population in the EIS Analysis Areas for these resources. Section 3.19.3 will draw upon information presented in those sections specific to impacts upon minority and low-income communities in order to develop conclusions for environmental justice concerns.



Table 3.19-4 displays impact criteria for determining socioeconomic and subsistence impacts as pertaining to environmental justice concerns. Table 3.19-5 and Table 3.19-6 show impact dimensions, likelihood rating, and the overall impact rating for human health impacts pertaining to environmental justice concerns. The rating tables for human health are consistent with Alaska Department of Health and Social Services (ADHSS) terminology for health impact assessments.

Table 3.19-4: Environmental Justice Impact Criteria for Socioeconomics and Subsistence

Type of Effect	Impact Component	Effects Summary		
Environmental Justice	Magnitude or Intensity (Socio-economics)	Low: Changes in socioeconomic indicators in unique communities are difficult to perceive or measure, generally within normal limits and trends or <5% increase or decrease. May alter but does not impair functions of affected sector(s).	Medium: Changes in socioeconomic indicators in unique communities are slightly outside normal limits and trends or between 5% to 10% increase or decrease.	High: Changes in socioeconomic indicators in unique communities are well outside normal limits and trends or greater than 10% increase or decrease.
	Magnitude or Intensity (Subsistence)	Low: Changes in unique communities necessitate small adjustments in harvest patterns and alternative resources are readily available, disturb or displace access in small portions (less than 10%) of the subsistence use area, affect generally abundant resources without diminishing overall harvest success, and sociocultural changes affect a small proportion (less than 10%) of households and small reductions in participation in subsistence activities.	Medium: Changes in unique communities require adjustments in harvest patterns and alternative resources are available at moderate cost and effort, disturb or displace access in moderate portions (up to 25%) of the subsistence use area, affect resources of limited abundance resulting in noticeable harvest reductions, and sociocultural changes affect a small proportion (up to 25%) of households and moderate reductions in participation in subsistence activities.	High: Changes in unique communities require large-scale adjustments in harvest patterns and alternative resources are unavailable or at high cost and effort, disturb or displace access in large portions (greater than 25%) of the subsistence use area, affect resources of limited abundance resulting in large harvest reductions, and sociocultural changes affect a small proportion (greater than 25%) of households and large reductions in participation in subsistence activities.
	Duration	Temporary: Changes in socioeconomic indicators in unique communities last less through project construction (3-4 years).	Long-term: Changes in socioeconomic indicators in unique communities extend through the life of the project (30 years) and return to pre-activity levels after actions causing impacts cease (up to 100 years).	Permanent: Changes in socioeconomic indicators in unique communities persist after actions that caused the impacts cease.

Table 3.19-4: Environmental Justice Impact Criteria for Socioeconomics and Subsistence

Type of Effect	Impact Component	Effects Summary		
	Geographic Extent	Local: Affects unique communities within a subregion, such as the Upper Kuskokwim, Central Kuskokwim, etc.	Regional: Affects unique communities throughout the EIS Analysis Area.	Extended: Affects unique communities outside the EIS Analysis Area.
	Context	Common: Affects populations that are not minority or low-income.	Unique: Affects minority or low-income populations, including Alaska Native populations.	

Table 3.19-5: Environmental Justice Impact Dimensions for Human Health

Step 1				
Impact Dimensions				
Impact Rating Score	A – Health Effect (+/-)	B- Duration	C-Magnitude	D- Extent
0 - Low	Effect is not perceptible	Less than 1 month	Minor	Individual cases
1 - Medium	(+/-) minor benefits or risks to injury or illness patterns (no intervention needed)	Short-term: 1-12 months	Those impacted will: <ul style="list-style-type: none"> <li>• Be able to adapt to the impact with ease and maintain pre-impact level of health,</li> <li>• See noticeable but limited and localized improvements to health conditions</li> </ul>	Local: small limited impact to households
2 - High	(+/-) moderate benefits or risks to illness or injury patterns (intervention needed, if negative)	Medium-term: 1 to 6 years	Those impacted will: <ul style="list-style-type: none"> <li>• Be able to adapt to the health impact with some difficulty and will maintain pre- impact level of health with support, or</li> <li>• experience beneficial impacts to health for specific population some maintenance may still be required</li> </ul>	Entire Potentially Affected Communities (potentially affected communities); village level
3 – Very High	(+/-) severe benefits or risks: marked change in mortality and morbidity patterns (intervention needed, if negative)	Long-term: more than 6 years/life of project and beyond	Those impacted will: <ul style="list-style-type: none"> <li>• Not be able to adapt to the health impact or to maintain pre-impact level of health</li> <li>• See noticeable major improvements in health and overall quality of life</li> </ul>	Extends beyond potentially affected communities; regional and state-wide levels

Source: ADHSS 2011, 2015.

Table 3.19-6: Environmental Justice Impact Likelihood Rating and Overall Impact Rating for Human Health

Step 2	Step 3						
Impact Level (Use Score from Step 1 to choose range)	Likelihood Rating						
	Extremely Unlikely (<1%)	Very Unlikely (1-10%)	Unlikely (10-33%)	About as likely as Not (33-66%)	Likely (66-90%)	Very Likely (90-99%)	Virtually Certain (>99%)
1-3	♦	♦	♦	♦	♦♦	♦♦	♦♦
4-6	♦	♦	♦	♦♦	♦♦	♦♦	♦♦♦
7-9	♦♦	♦♦	♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦♦
10-12	♦♦♦	♦♦♦	♦♦♦	♦♦♦♦	♦♦♦♦	♦♦♦♦	♦♦♦♦
Step 4	Impact Rating						
	Low= ♦ Medium= ♦♦ High = ♦♦♦ Very High = ♦♦♦♦						

Source: ADHSS 2011, 2015.

The context for all environmental justice impacts is unique as the analysis considers impacts to the communities with primarily low-income and minority populations identified in the Affected Environment (Section 3.19.2). Data limitations preclude a separate quantitative analysis of the effects of each project component (mine site, transportation facilities, and pipeline). For the three resource areas considered in the analysis for environmental justice, socioeconomic and human health data are aggregated for all components and subsistence differences by component are noted in the text. The summary impact rating for environmental justice does not separate components.

### 3.19.3.1 ALTERNATIVE 1 – NO ACTION

Under the No Action Alternative, the proposed Donlin Gold Project would not receive permits, and Donlin Gold would not establish a mine site, develop transportation facilities, or construct a natural gas pipeline. Baseline employment for exploration and permitting would not be expected to continue.

Reductions in job opportunities would affect the minority (Alaska Native) and low-income communities in the Y-K region. Donlin Gold has been an important employer in recent years, and the loss of these jobs would not be easily offset. As a result, some people may leave the Y-K region under the No Action Alternative. Out-migration may cause an erosion of economic stability and social integrity in Y-K communities. Impacts to areas outside of the Y-K region would be negligible.

The advance royalties that Donlin Gold pays to Calista (estimated at \$1 million per year) would cease under the No Action Alternative. These revenues contribute to dividends and employment opportunities Calista provides to its shareholders. This would affect residents of the minority (Alaska Native) and low-income communities of the Y-K region. Due to sharing requirements under Section 7(i) of ANCSA, this would also affect Alaska Native shareholders

outside the region, which may or may not raise environmental justice concerns depending on the ethnic composition and income levels of the communities involved..

Direct and indirect socioeconomic effects from the No Action Alternative in minority and low-income communities would be of medium intensity (observable reductions in employment opportunities as a result of termination of Donlin Gold activities), permanent in duration, and regional in extent (within the Y-K region). These effects would be unique in context (affecting minority and low-income communities). Impacts to areas outside of the Y-K region would be negligible, and minority and low-income communities would bear a disproportionate share of adverse effect from the loss of jobs, income, and sales.

Without disturbance from exploration activities, habitat would recover, wildlife would reoccupy the area, and subsistence harvests would be re-established in the proposed mine site area. At the mine site, there would be minor positive effects on subsistence resources and access for Crooked Creek subsistence hunters under the No Action Alternative. There would be no direct effect to competition for subsistence resources. Local employment from exploration and environmental studies for the proposed project would not continue, possibly leading to some families leaving the region. There would be a loss of income to fund subsistence activities, but labor and time for subsistence would be increased. Potential effects to socio-cultural aspects of subsistence would be of low intensity (including both loss of income and greater availability of labor and time for subsistence activities), permanent in duration, and affecting subsistence practices that are unique in context. These impacts would extend to the minority and low-income communities of the Y-K region.

Socioeconomic impacts from Donlin Gold exploration activities, which were realized in the Y-K region over the previous decade, would cease. Human health impacts associated with the loss of jobs and decrease in household income would be low, with potential increases or decreases in social determinants of health, such as income, psychosocial stress, substance abuse, and family stability. Other health factors would return to pre-project levels, such as exposure to accidents, injuries, diseases and potentially hazardous materials would cease. Direct and indirect human health effects from the No Action Alternative in minority and low-income communities would be of low magnitude or intensity (reductions in income and possible changes in psychosocial stress), high in duration, and medium in extent (individual households within the Y-K region). These effects would be unique in context (affecting minority and low-income communities). Impacts to areas outside of the Y-K region would be negligible.

#### 3.19.3.1.1 SUMMARY FOR ALTERNATIVE 1

Impacts from Alternative 1 would extend permanent impacts to the predominantly minority (Alaska Native) and low-income communities (unique) of the Y-K region. Impacts would be of low to medium intensity. The loss of jobs and income in the region could lead to a lower quality of life in the communities and leave less money to fund subsistence activities and to contribute to improving health. However, there would be increased time and labor available for subsistence, and minor beneficial effects to subsistence resources and access. Alternative 1 would have a minor impact summary rating to minority and low-income communities in the EIS Analysis Area. Alternative 1 would have disproportionately adverse effects to minority and low-income populations as effects from the reduction in income would be concentrated in the Y-K region. Thus, Alternative 1 would raise an environmental justice concern.



### 3.19.3.2 ALTERNATIVE 2 – DONLIN GOLD'S PROPOSED ACTION

#### 3.19.3.2.1 EFFECTS FROM CHANGES IN SOCIOECONOMIC RESOURCES

High intensity beneficial employment and income effects would occur in the Y-K region due to the current high rates of unemployment in the area over the life of the mine, with the intensity of impacts reduced to medium beneficial during closure as hiring levels would decrease. Donlin Gold has committed to hiring qualified Y-K region residents. During a Hooper Bay Scoping Meeting, Mr. Ben Nukusuk noted that, "Among our concerns I see great potential economic benefits to our people, which have been the poorest, if not the poorest, in our state" (URS 2013b).

Project payments to state and local governments would largely not be directly to minority and low-income communities, but could indirectly affect government jobs in these communities by providing funds to state budgets. Royalty payments to ANCSA corporations would provide a beneficial effect to shareholders in the Y-K region as well as outside of the area; royalty payments to shareholders outside of the Y-K region are not generally considered residents of a low-income or minority community. The magnitude of the effects of project payments to state and local governments and ANCSA corporations would be medium to high and beneficial over a long-term duration. Impacts to public infrastructure would be low, as camps housing workers would be self-contained and operated and maintained by Donlin Gold throughout project construction, operations and maintenance, and closure and reclamation.

#### 3.19.3.2.2 EFFECTS FROM CHANGES IN SUBSISTENCE RESOURCES

Communities in the Y-K region have subsistence-based economies. While subsistence resources are important because of the high cost of grocery store food and the low number of jobs, subsistence activities also are a way of life that is woven into the culture and traditions of the Y-K region. During a Bethel Scoping Meeting, Mr. David Trantham noted his concern about subsistence resources in small, rural communities, particularly fish—"That river is my supermarket...My...concern is about subsistence lifestyle, not only for my family, but for every family, especially those families that live in small communities" (URS 2013b).

Employment and income from all project components would have low to medium intensity beneficial effects, with the greatest magnitude of these effects occurring in the smaller Kuskokwim River communities during construction (which are low-income and minority communities). Income could be used to purchase subsistence tools and transport, such as fuel for snowmachines. The rotational shift nature of employment and potential for workers to relocate for jobs may cause adverse impacts of low to medium intensity to sociocultural aspects of subsistence, particularly in smaller communities.

The mine site would have negligible impacts to subsistence for most of the minority and low-income communities in the Y-K region. The community of Crooked Creek (which is considered a low-income and minority community) would experience the continuation of low intensity changes to subsistence resource abundance and access over the life of mine, which would diminish upon mine closure. No other Kuskokwim River communities have subsistence use areas that overlap with the mine site. Perceived contamination of waterfowl in the project area may continue long past mine closure.

Transportation facilities would have low intensity impacts to subsistence activities in the Y-K region that are long-term in duration (through the life of the mine). Impacts to subsistence resource abundance would increase to a medium intensity for subsistence fishing in the narrow, shallow reaches of the Kuskokwim River, such as Nelson Island, Birch Tree Crossing, the Aniak vicinity, the mouth of the Holokuk River, and north of the mouth of the Oskawalik River. Impacts to subsistence access could affect Crooked Creek residents as fish camps may be displaced below the Angyaruaq (Jungjuk) Port site. Subsistence resources in minority and low-income communities affected by the proposed project would be generally commonly available, with the exception of Chinook salmon and moose that have required conservation measures in recent years.

The natural gas pipeline would bring low intensity, localized subsistence resource and access impacts to minority and low-income communities near the corridor, particularly to Stony River and Nikolai during construction. There would be machinery, pipe, workers, and infrastructure on or near the 315-mile pipeline ROW, which would deter subsistence animals and reduce access to subsistence use areas, generally for one season as the construction moves through an area. Increased competition with non-local residents surrounding the pipeline ROW and Farewell airstrip use could bring medium intensity subsistence competition impacts to McGrath, Nikolai, and Takotna.

#### 3.19.3.2.3 EFFECTS FROM CHANGES IN HEALTH RESOURCES

The Donlin Gold Project would generally bring economic benefits of medium magnitude or intensity to low-income and minority communities in the Y-K region, which could increase available funds to support subsistence activities, improve food security, and contribute to improving health. Adverse impacts associated with increased economic resources could also include negative health consequences related to increases in substance abuse, potential accidents and injuries, exposure to hazardous constituents, and infectious diseases, and subject to control and mitigation based on the proposed project plans. There may be adverse human health impacts to low-income and minority communities in the Y-K region of low to medium magnitude or intensity with increased risks for accidents and injuries, potential exposure to hazardous constituents, and infectious diseases.

#### 3.19.3.2.4 CLIMATE CHANGE

The Donlin Gold Project would contribute to climate change through the production of greenhouse gases as discussed in Section 3.8, Air Quality. The amount of greenhouse gas emissions from implementation of Alternative 2 is not likely to create additional climate change effects for low-income and minority communities in the EIS Analysis Area, and would not raise an environmental justice concern. However, if current climate change trends persist, impacts to low-income and minority populations would likely be similar to those discussed under the Affected Environment (Section 3.19.2), including existing disproportionate adverse impacts for low-income and minority communities. The existing disproportionate climate change impacts to low-income and minority communities are expected to continue into the future, but the project would not directly cause additional disproportionate climate change impacts to low-income and minority communities.

#### 3.19.3.2.5 SUMMARY FOR ALTERNATIVE 2

Alternative 2 would provide employment and income to the Y-K region, an area with notably low per capita incomes, high unemployment, and high poverty rates. Impacts in the Y-K region would be of high beneficial intensity during construction and operations, and taper to medium beneficial intensity during mine closure. Employment and income generated by the project would have medium beneficial impacts to financially support subsistence activities in Kuskokwim River communities, and low beneficial impact to subsistence elsewhere in the Y-K region.

There would be low to medium intensity adverse impacts to subsistence. In general, impacts would be of low intensity to Crooked Creek, medium intensity for subsistence fishing in the narrow reaches of the Kuskokwim River, and medium intensity increased competition in the vicinity of the Farewell Airstrip. Effects would be negligible to low intensity elsewhere in the Y-K region and along the pipeline corridor. Rotational work schedules and out-migration could have varying degrees of adverse impacts, ranging from low to medium intensities, depending on the size of communities, and the proportion of households with Donlin Gold Project employees. Impacts to subsistence would be low to negligible upon mine closure.

The Donlin Gold Project would generally bring medium magnitude or intensity health impacts to the Y-K region. An increase in employment and incomes could support subsistence activities, improve food security, and contribute to improving health. Adverse human health impacts could include increases in substance abuse, potential accidents and injuries, exposure to hazardous constituents, and infectious diseases.

Overall, Alternative 2 would have minor to moderate adverse impacts and beneficial health impacts to minority and low-income communities in the Y-K region. Alternative 2 would have disproportionately adverse effects to minority and low-income populations. Thus, Alternative 2 would raise an environmental justice concern.

Table 3.19-7 summarizes the impact rating for health as it relates to environmental justice. Table 3.19-8 summarizes impact ratings for socioeconomics and subsistence as they relate to environmental justice, and shows the overall impact summary rating for low-income and minority communities in the EIS Analysis Area and potential environmental justice concerns.

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Table 3.19-7: Alternative 2 Environmental Justice Impact Summary for Health<sup>1</sup>

Potential Impact	Negative/ Positive	Health Effect	Magnitude/ Intensity	Duration	Geographic Extent	Severity Ranking	Likelihood Rating	Impact Rating	Impact Level	Context	Disproportionate adverse impacts to minority or low- income communities, including Alaska Native populations?
Human Health in the Context of Environmental Justice	+/-	Medium (1)	Medium (1)	Very High (3)	Medium (1), limited number of households	6	33-66%	**	Medium	Unique	Yes

Notes:  
1 The impact dimensions and rating criteria for human health are consistent with ADHSS terminology for health impact assessments.

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Table 3.19-8: Alternative 2 Impact Summary Table

Impacts to low-income or minority communities	Impact Level					
	Magnitude or Intensity	Duration	Geographic Extent	Context	Disproportionate adverse impacts to minority or low-income communities, including Alaska Native populations?	Summary Impact <sup>1</sup>
Socioeconomic	High (Beneficial) during Construction and Operation, Medium (Beneficial) during Closure	Long-term	Regional	Unique	Yes	
Subsistence	<p><i>Mine Site:</i> Low for Crooked Creek and Bering Sea Coast waterfowl harvesters during construction and operations, Low after closure; No impact for other communities; Medium beneficial for income in Kuskokwim River communities, Low elsewhere in the Y-K region; Low to medium adverse effect for out-migration/rotation work shifts.</p> <p><i>Transportation Facilities:</i> Low to Medium for subsistence fishing changes in narrow reaches of the Kuskokwim River; Medium for Crooked Creek</p> <p><i>Pipeline:</i> Low; Medium in vicinity of Farewell Airstrip</p>	Long-term; Permanent for perceived risk of waterfowl contamination; Temporary for pipeline construction disturbances	<p><i>Mine Site:</i> Local, except regional for perceived risk of waterfowl contamination</p> <p><i>Transportation:</i> Regional</p> <p><i>Pipeline:</i> Local</p>	Unique	Yes	

Table 3.19-8: Alternative 2 Impact Summary Table

Impacts to low-income or minority communities	Impact Level					
	Magnitude or Intensity	Duration	Geographic Extent	Context	Disproportionate adverse impacts to minority or low-income communities, including Alaska Native populations?	Summary Impact <sup>1</sup>
Alternative 2 Summary Impact Conclusion <sup>1</sup>	Low to medium adverse impacts, Medium to high beneficial impacts	Long-term	Regional	Unique	Yes	Minor to Moderate adverse effects, with Major beneficial income effects

Notes:

- 1 Alternative 2 Summary Impact Conclusion takes into account human health, socioeconomic, and subsistence impacts as they pertain to environmental justice concerns. Human health impacts were taken into account for the summary environmental justice impact even though the resource-specific impacts for human health are in Table 3.19-7.



These effects determinations take into account impact reducing design features (Table 5.2-1 in Chapter 5, Impact Avoidance, Minimization, and Mitigation) proposed by Donlin Gold and also the Standard Permit Conditions and BMPs (Section 5.3 in Chapter 5, Impact Avoidance, Minimization, and Mitigation) that would be implemented. Design features and BMPs considered for environmental justice would include those identified for socioeconomic (discussed in Section 3.18.2.2.5), subsistence (discussed in Section 3.21.6.3.5), and human health (discussed in Section 3.22.4.2.10). Several examples of these are presented below.

Design features most important for reducing impacts to minority and low-income communities include:

- Agreements with Alaska Native land owners create contractual commitments to shareholder hire and revenue flows for Alaska Native shareholders (minority and low income);
- Consultation with the public and tourism and recreation businesses to minimize impacts to current uses and operations;
- The development and implementation of a Construction Communications Plan to inform the public and commercial operators of construction activities;
- Assistance to develop project related training programs for local residents to enhance local hire potential during construction, and operations and maintenance phases;
- Shareholder preference in hiring maximizes economic benefit to local communities (minority and low income); along with enclave work place, this minimizes risk of influx of non-local workers into nearby communities during construction, and operations and maintenance phases;
- Design for closure would occur even before construction for reclamation and closure planning at the mine site. This incorporates methods for safe and efficient closure of the mine as an integral part of the planned mine design and operations. Implementing design for closure can have the effect of minimizing disturbance and the re-handling of materials;
- Implementation of barge guidelines by Donlin Gold for operating at certain river flow rates, and conduct ongoing surveys of the Kuskokwim River navigation channel to identify locations that should be avoided to minimize effects on bed scour and the potential for barge groundings. As part of the proposed operation, equipment will be available to free or unload/lighter barges in the event of groundings. The equipment will be available as part of ongoing operations, it will not all be dedicated standby equipment;
- Avoidance of areas with tourist-related facilities if reasonably possible. Donlin Gold would engage with lodges and guides in advance of construction to coordinate activities;
- Pipeline construction schedule adjustment to minimize impacts to peak periods of recreation and tourism activities in the area, e.g., recreation uses of INHT for annual events;
- Donlin Gold would implement a no hunting/fishing policy for employees at work sites to minimize competition from employees for local resources;

- The project design includes shift work schedules to maximize opportunities for employees to remain active in subsistence harvest efforts during construction and operations phases;
- Ocean and river fuel barges would be double hulled and have multiple isolated compartments for transporting fuel to reduce the risk of a spill;
- The project design includes a communication program in communities to keep local communities informed of the schedules and current status of barge traffic as well as minimize displacement of subsistence fishing by barges;
- Additional design features reduce impacts to wetlands and vegetation and contribute to maintaining habitat for subsistence resources. Others reduce disturbance and displacement, or to reduce spill risks to fish and wildlife used for subsistence. See Table 5.2-1 for details;
- Donlin Gold would develop and implement a drug and alcohol abuse prevention program for employees;
- Donlin Gold would develop an Operations and Maintenance Plan/Manual; Health, Safety, and Environment Plan (including a Safety Plan/Program), Pipeline Surveillance and Monitoring Plan, and other plans that would outline safety measures that would be implemented during operations;
- Monitor physical (water quality) and biological (fish, wetlands) resources during all project phases (construction, operations, reclamation, and post-closure) in Crooked Creek; and
- At the TSF dry beach the project design includes installing silt fences, removing snow from active placement areas only, and using polymer dust suppressant.

Standard Permit Conditions and BMPs most important for reducing impacts to minority and low-income communities include:

- Monitoring of water withdrawals to ensure permitted limits are not exceeded;
- Protection of the habitat of subsistence resources through Erosion and Sediment Control Plan and Storm Water Pollution Prevention Plans prior to the commencement of ground disturbance activities;
- Use of BMPs such as watering and use of dust suppressants to control fugitive dust and to avoid impacts on subsistence berry picking activities;
- Developing spill prevention and response type plans as required by federal and state requirements. The plan(s) will prescribe effective processes and procedures to prevent the spill of fuel or hazardous substances and include procedures to respond to accidental releases; and
- Developing an Erosion and Sediment Control Plan and Storm Water Pollution Prevention Plans prior to the commencement of ground disturbance activities.

### 3.19.3.2.6 ADDITIONAL MITIGATION AND MONITORING FOR ALTERNATIVE 2

The Corps is considering additional mitigation (Table 5.5-1 in Chapter 5, Impact Avoidance, Minimization, and Mitigation) and monitoring measures (Table 5.7-1 in Chapter 5, Impact Avoidance, Minimization, and Mitigation) to reduce the effects presented above. Additional mitigation measures for environmental justice would include those identified for socioeconomics (discussed in Section 3.18.2.2.6), subsistence (discussed in Section 3.21.6.3.6), and human health (discussed in Section 3.22.4.2.11). Measures discussed in socioeconomics, subsistence, and human health include:

- Monitor socioeconomic conditions (population, demographics, employment, income, education, and health indicators) in Y-K villages using existing/annually updated state and federal statistics.
- Closure of borrow sites along the mine access road and pipeline, particularly those near communities and major river crossings, would be intended to preclude use of these resources by future users. However, depending on permitter/stakeholder/ landowner interest, consideration should be given to leaving accessible borrow sites open beyond project closure. This may mitigate area wide geologic impacts, through use of existing sites, rather than opening of new sites for borrow materials. A local entity would need to take responsibility for management and ultimate closure of the borrow sites. Per regulation, ADNIR may not be able to close use of a borrow site near a community.
- Donlin Gold should use current information and traditional knowledge to identify locations and times when subsistence activities occur; and to the extent practicable, minimize impacts to these activities.
- During project construction, operations, and closure, communication between Donlin Gold and subsistence users to ensure dissemination of factual information concerning actual ecological risks and potential exposure of waterfowl to contamination is important to address concerns and perceptions about contamination. This may include monitoring and testing of bird carcasses, if appropriate.
- Two way communications strategy should be implemented that keeps local communities informed of the schedules and current status of barge traffic, and keeps Donlin informed of the location and timing commercial and subsistence fishing activities. Plan of communication needs to include Bethel, as there is a lot of traffic moving through Bethel Port.
- Fish tissue monitoring should include development of site-specific bioaccumulation factors (BAFs) for methylmercury evaluation. Contingency measures (adaptive management) should be developed and defined if impacts occur beyond what are expected.

If these mitigation measures were adopted and required, impacts to low-income and minority communities causing environmental justice concerns could be somewhat reduced. The summary impact ratings would remain the same for all project components.

### 3.19.3.3 ALTERNATIVE 3A – REDUCED DIESEL BARGING: LNG-POWERED HAUL TRUCKS

Employment and income under Alternative 3A would be similar to those under Alternative 2, but would create small decreases in jobs during construction of transportation facilities, as well as small decreases in fuel expenditures during operation of the mine.

Alternative 3A would decrease the barging frequency from that proposed under Alternative 2, lessening impacts to subsistence fishing in minority and low-income communities in the narrow reaches of the Kuskokwim River.

Under Alternative 3A, there would be a reduction in the risk of water transport accidents and injuries, reduced potential exposure to hazardous constituents in air and water, and greater access and abundance of subsistence resource.

#### 3.19.3.3.1 SUMMARY FOR ALTERNATIVE 3A

The summary impact for Alternative 3A would be similar to Alternative 2. There would be small decreases relative to total project employment and expenditures for jobs and fuel costs for transportation facilities. Adverse impacts to subsistence fishing in the narrow reaches of the Kuskokwim River would be reduced to a low intensity impact, and there would be some reductions in potential human health impacts. Impacts associated with climate change would be the same as discussed for Alternative 2. The effects determinations take into account applicable impact reducing design features, as discussed in Alternative 2. No additional mitigation measures have been identified to reduce impacts to low-income and minority communities and lessen environmental justice concerns.

As under Alternative 2, minority and low-income communities in the Y-K region would incur disproportionate adverse impacts, and Alternative 3A would raise an environmental justice concern.

### 3.19.3.4 ALTERNATIVE 3B – REDUCED DIESEL BARGING: DIESEL PIPELINE

Alternative 3B would slightly enhance the beneficial impacts from employment, income, and sales for minority and low-income communities compared to those under Alternative 2. A slightly larger workforce and increased expenditures for a diesel pipeline and diesel power mining operations under Alternative 3B would be greater than concurrent reductions in employment and expenditures for shipping, barging, trucking, and storage. The expansion of the existing Tyonek North Foreland Barge Facility would create job opportunities in the minority and low-income community of Tyonek.

Under Alternative 3B, local communities may be interested in obtaining access to diesel fuel piped through the Donlin Gold pipeline; however, no utilities or energy suppliers have expressed interest in developing the distribution system that would be required. If such a distribution system were to be implemented in the future, then the communities could experience a decrease in energy costs if the diesel fuel price transported by pipeline was less than the current price of diesel fuel brought in by barge. Therefore, Alternative 3B may eventually have potential to lower fuel costs for communities in the region.

Alternative 3B would decrease the barging frequency from that proposed under Alternative 2, lessening impacts to subsistence fishing in minority and low-income communities in the narrow reaches of the Kuskokwim River to low intensity. The dock expansion in Tyonek may increase

potential disturbance of marine mammals, but there are few marine mammals in the area of the Tyonek North Forelands Facility.

For human health effects, the lower amount of barging would result in a decreased potential for accidents and reduced impacts to subsistence fishing in the low-income and minority communities of the Y-K region. There would also be fewer impacts to air quality, water quality, and biota along the Kuskokwim River associated with the decrease in barging.

#### 3.19.3.4.1 SUMMARY FOR ALTERNATIVE 3B

The summary impact for Alternative 3B would be similar to Alternative 2. Beneficial impacts from income in minority and low-income communities would be enhanced. Adverse impacts to subsistence fishing in the narrow reaches of the Kuskokwim River would be reduced. Tyonek may have increased employment opportunities from the project, but there may some potential low intensity disturbance of marine mammals. Impacts associated with climate change would be the same as discussed for Alternative 2. The effects determinations take into account applicable impact reducing design features, as discussed in Alternative 2. No additional mitigation measures have been identified to reduce impacts to low-income and minority communities and lessen environmental justice concerns.

As under Alternative 2, minority and low-income communities in the Y-K region would incur disproportionate adverse impacts, and Alternative 3B would raise an environmental justice concern.

#### 3.19.3.5 ALTERNATIVE 4 – BIRCH TREE CROSSING PORT

Alternative 4 would enhance the beneficial impacts from employment, income, and sales for minority and low-income communities in the Y-K region compared to those under Alternative 2. A larger workforce and increased expenditures for a longer road would be greater than concurrent decreases in barge crew employment and expenditures. The intensity of socioeconomic impacts would remain the same.

Alternative 4 would decrease the barging distance from that proposed under Alternative 2, lessening impacts to subsistence fishing in minority and low-income communities in the narrow reaches of the Kuskokwim River above Birch Tree Crossing to low intensity. The longer mine access road proposed under Alternative 4 would increase displacement of access and habitat for subsistence uses, crossing subsistence berry gathering and hunting areas for moose, caribou, and black bear in many Central Kuskokwim River Communities (see Figure 3.21-51 and Figure 3.21-54 in Section 3.21 Subsistence). The BTC Road bisects a portion of the traditional use areas of Aniak and Chuathbaluk, and the BTC Port site could displace set net and drift net fishing opposite the downstream mouth of Aniak Slough (Figures 3.21-56 and 3.21-57A, B, C in Section 3.21 Subsistence).

Alternative 4 would have similar human health impacts as those discussed under Alternative 2, but would have a reduced risk of water transport accidents and injuries, an increase in potential surface transport accidents and injuries, a reduction in potential subsistence fisheries impacts on the Kuskokwim River, and a potential increase in the displacement of wildlife used by subsistence hunters in the vicinity of the mine access road.

#### 3.19.3.5.1 SUMMARY FOR ALTERNATIVE 4

The summary impact for Alternative 4 would be similar to Alternative 2. Beneficial impacts from income in minority and low-income communities would be enhanced. Adverse impacts to subsistence fishing in the narrow reaches of the Kuskokwim River would be reduced, but displacement of subsistence activities in the vicinity of the mine access road would be increased. There could be a reduction in potential water transportation injuries and an increase in potential surface transportation injuries. Impacts associated with climate change would be the same as discussed for Alternative 2. The effects determinations take into account applicable impact reducing design features, as discussed in Alternative 2. No additional mitigation measures have been identified to reduce impacts to low-income and minority communities and lessen environmental justice concerns.

As under Alternative 2, minority and low-income communities in the Y-K region would incur disproportionate adverse impacts, and Alternative 4 would raise an environmental justice concern.

#### 3.19.3.6 ALTERNATIVE 5A – DRY STACK TAILINGS

Alternative 5A would substitute “dry stacks” as the method of tailings management, as opposed to conventional slurry tailings ponds in Alternative 2. The summary direct and indirect impacts to minority or low-income communities in the EIS Analysis Area from Alternative 5A would be similar to those under Alternative 2. As under Alternative 2, minority and low-income communities in the Y-K region would incur disproportionate adverse impacts, and Alternative 5A would raise an environmental justice concern. Impacts associated with climate change would be the same as discussed for Alternative 2. The effects determinations take into account applicable impact reducing design features, as discussed in Alternative 2. No additional mitigation measures have been identified to reduce impacts to low-income and minority communities and lessen environmental justice concerns.

#### 3.19.3.7 ALTERNATIVE 6A – MODIFIED NATURAL GAS PIPELINE ALIGNMENT: DALZELL GORGE ROUTE

Alternative 6A would enhance the beneficial impacts from employment, income, and sales for minority and low-income communities in the Y-K region compared to those under Alternative 2. A larger workforce and increased expenditures (tens of millions of dollars) would occur during pipeline construction (Donlin Gold 2015h; see Section 3.18.2.7, Socioeconomics). The intensity of socioeconomic impacts would remain the same.

Direct and indirect impacts to subsistence resources for minority or low-income communities from Alternative 6A would be similar to those under Alternative 2, including impacts from the natural gas pipeline to subsistence.

Direct and indirect impacts for human health would be similar to those discussed under Alternative 2, with minor to moderate adverse impacts and beneficial impacts to minority and low-income communities in the Y-K region.



#### 3.19.3.7.1 SUMMARY FOR ALTERNATIVE 6A

The summary impact for Alternative 6A would be similar to Alternative 2. Adverse and beneficial health impacts associated with increased income in minority and low-income communities in the Y-K region would be enhanced during pipeline construction. Impacts associated with climate change would be the same as discussed for Alternative 2. The effects determinations take into account applicable impact reducing design features, as discussed in Alternative 2. No additional mitigation measures have been identified to reduce impacts to low-income and minority communities and lessen environmental justice concerns.

As under Alternative 2, minority and low-income communities in the Y-K region would incur disproportionate adverse impacts, and Alternative 6A would raise an environmental justice concern.

#### 3.19.3.8 IMPACT COMPARISON – ALL ALTERNATIVES

A comparison of the impacts to minority and low-income communities by alternative is presented in Table 3.19-9.

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Table 3.19-9: Comparison of Impacts by Alternative\*

Impact- causing Project Component	Alt. 2 – Proposed Action	Alt. 3A – LNG-Powered Haul Trucks	Alt. 3B – Diesel Pipeline	Alt. 4 – BTC Port	Alt. 5A – Dry Stack Tailings	Alt. 6A – Dalzell Gorge Route
Socioeconomics	<p><u>Construction</u></p> <ul style="list-style-type: none"><li>Direct jobs, Y-K region: 1,600 to 1,900 (50-59% of total direct jobs)</li><li>Direct Payroll, Alaska: \$940 million</li><li>Direct Expenditures, Alaska: \$1.7 billion</li><li>ROW Acquisition to state: \$1.5 million</li><li>ROW Acquisition to ANCSA corps: \$250,000</li></ul> <p><u>Operations</u></p> <ul style="list-style-type: none"><li>Direct Jobs, Y-K region: 500 to 600 (50-60% of total direct jobs)</li><li>Direct Payroll, Alaska: \$1.7 billion</li><li>Direct Expenditures, Alaska: \$9.8 billion</li><li>Royalties to Calista (and shared with other ANCSA regional corporations): \$55.4 million per year over project life</li><li>Royalties to The Kuskokwim Corporation: Not estimated</li><li>Lease payments to Calista and Cook Inlet Region Inc.: \$250,000 per year over project life</li><li>Corporate Income Tax and Mining License Tax to state: \$1.24 billion over project life</li></ul> <p><u>Closure and Reclamation</u></p> <ul style="list-style-type: none"><li>Total Direct Jobs: 20 to 100 for deconstruction, 6 for about 50 years after mine closure, 6 in perpetuity</li></ul>	<p><u>Construction</u></p> <ul style="list-style-type: none"><li>Direct and Indirect Jobs: Same as Alternative 2</li><li>Direct and Indirect Expenditures: Same as Alt 2, except decrease for transportation by tens of millions of dollars</li></ul> <p><u>Operations</u></p> <ul style="list-style-type: none"><li>Direct and Indirect Jobs: Same as Alternative 2, except decrease for transportation.</li><li>Direct and Indirect Expenditures: Same as Alternative 2, except decrease for transportation by tens of millions of dollars.</li></ul> <p><u>Closure and Reclamation</u></p> <p>Same as Alternative 2</p>	<p><u>Construction</u></p> <ul style="list-style-type: none"><li>Direct and Indirect Jobs: Same as Alternative 2, except increase for pipeline.</li></ul> <p>Direct and Indirect Expenditures: Same as Alternative 2, except</p> <ul style="list-style-type: none"><li>Decrease for mine site and transportation by tens of millions of dollars</li><li>Increase for pipeline by hundreds of millions of dollars</li></ul> <p><u>Operations</u></p> <p>Direct and Indirect Jobs: Same as Alternative 2, except.</p> <ul style="list-style-type: none"><li>Decrease for transportation</li><li>Increase for pipeline</li></ul> <p>Direct and Indirect Expenditures: Same as Alternative 2, except</p> <ul style="list-style-type: none"><li>Increase for mine site by hundreds of millions of dollars</li><li>Decrease for transportation by tens of millions of dollars</li><li>Increase for pipeline by tens of millions of dollars</li></ul> <p><u>Closure and Reclamation</u></p> <ul style="list-style-type: none"><li>Direct and Indirect Jobs: Same as Alt 2, except increase for pipeline</li><li>Direct and Indirect Expenditures: Same as Alternative 2</li></ul>	<p><u>Construction</u></p> <ul style="list-style-type: none"><li>Direct and Indirect Jobs: Same as Alternative 2, except increase for transportation</li><li>Direct and Indirect Expenditures: Same as Alternative 2, except increase for transportation by tens of millions of dollars</li></ul> <p><u>Operations</u></p> <ul style="list-style-type: none"><li>Direct and Indirect Jobs: Same as Alternative 2, except increase for transportation by truck and decrease for transportation by barge</li><li>Direct and Indirect Expenditures: Same as Alternative 2, except increase for transportation by less than ten million dollars</li></ul> <p><u>Closure and Reclamation</u></p> <ul style="list-style-type: none"><li>Direct and Indirect Jobs: Same as Alternative 2, except increase for transportation</li><li>Direct and Indirect Expenditures: Same as Alternative 2, except increase for transportation</li></ul>	Same as Alternative 2	<p><u>Construction</u></p> <ul style="list-style-type: none"><li>Direct and Indirect Jobs: Same as Alternative 2, except increase for pipeline</li><li>Direct and Indirect Expenditures: Same as Alternative 2, except increase for pipeline by tens of millions of dollars</li></ul> <p><u>Operations</u></p> <p>Same as Alternative 2</p> <p><u>Closure and Reclamation</u></p> <p>Same as Alternative 2</p>

Table 3.19-9: Comparison of Impacts by Alternative\*

Impact- causing Project Component	Alt. 2 – Proposed Action	Alt. 3A – LNG-Powered Haul Trucks	Alt. 3B – Diesel Pipeline	Alt. 4 – BTC Port	Alt. 5A – Dry Stack Tailings	Alt. 6A – Dalzell Gorge Route
Subsistence	<p>Resource abundance and availability:</p> <ul style="list-style-type: none"><li>• <u>Mine site</u> – Low intensity impacts for Crooked Creek and Bering Sea Coast waterfowl harvesters during construction and operation. Negligible to low after closure. Permanent perceived risk for waterfowl harvest in mine site vicinity.</li><li>• <u>Transportation Facilities</u> – Low intensity impacts for the Y-K region (increases to medium intensity for subsistence fishing in the narrow reaches of the Kuskokwim River) during construction and operation. Negligible to low after closure.</li><li>• <u>Pipeline</u> – Low for subsistence hunting and fishing.</li></ul> <p>Access:</p> <ul style="list-style-type: none"><li>• <u>Mine site</u> – Low intensity impacts to Crooked Creek during construction and operation. No impact to other communities.</li><li>• <u>Transportation Facilities</u> – Low intensity impacts to Y-K region from mine access road and barge traffic during operation. Medium intensity impacts to Crooked Creek subsistence fishing during operation. After closure, low beneficial from improved subsistence access via the mine access road.</li><li>• <u>Pipeline</u> – Low intensity impacts.</li></ul> <p>Competition:</p> <ul style="list-style-type: none"><li>• <u>Mine Site and Transportation Facilities</u> – Low intensity impacts for the Y-K region from non-local mine employees. Unpredictable timing and intensity for renewed in-region competition for moose and salmon.</li><li>• <u>Pipeline</u> – Low intensity impacts. Medium intensity impacts in the vicinity of Farewell Airstrip for McGrath, Nikolai, and Takotna.</li></ul>	<p>Same as Alternative 2, but decreased barging frequency would lessen impacts to subsistence fishing in minority and low-income communities in the narrow reaches of the Kuskokwim River.</p>	<p>Same as Alternative 2, but lessening of impacts to subsistence fishing in minority and low-income communities in the narrow reaches of the Kuskokwim River to low intensity; low intensity impacts to marine mammal subsistence resources added for Tyonek with dock expansion.</p>	<p>Same as Alternative 2, but adverse impacts to subsistence fishing in the narrow reaches of the Kuskokwim River would be reduced and displacement of subsistence activities in the vicinity of the mine access road would be increased.</p>	<p>Same as Alternative 2</p>	<p>Same as Alternative 2</p>

Table 3.19-9: Comparison of Impacts by Alternative\*

Impact- causing Project Component	Alt. 2 – Proposed Action	Alt. 3A – LNG-Powered Haul Trucks	Alt. 3B – Diesel Pipeline	Alt. 4 – BTC Port	Alt. 5A – Dry Stack Tailings	Alt. 6A – Dalzell Gorge Route
Human Health	<p>Socio-cultural impacts:</p> <p><u>All components</u> – Medium beneficial effects from income for the Central Kuskokwim sub-region. Low beneficial effects elsewhere. Low to medium adverse impacts from out-migration and rotational work schedules. Low adverse after closure due to the loss of income.</p> <p><u>Social Determinants of Health</u></p> <ul style="list-style-type: none"><li>• Beneficial increases in household income, employment, education.</li><li>• Adverse psychosocial stressors with possible increased drug and alcohol use and changes in lifestyle and cultural practices.</li></ul> <p><u>Accidents and Injuries</u></p> <ul style="list-style-type: none"><li>• Potential for water, surface, and air transportation accidents.</li></ul> <p><u>Exposure to Potentially Hazardous Substances</u></p> <ul style="list-style-type: none"><li>• Potential groundwater contamination (only has a health effect if occurs where used for drinking water).</li><li>• Fugitive dust could result in elevated concentrations of metal in soils surrounding the mine site.</li><li>• Small changes in mercury concentrations in plants, fish, and wildlife.</li></ul> <p><u>Food, Nutrition, and Subsistence Activity</u></p> <ul style="list-style-type: none"><li>• Benefits from increases in food security and decreases in regional food costs.</li><li>• Some potential adverse impacts to subsistence resources, but increased income to facilitate subsistence activities.</li></ul> <p><u>Infectious Diseases</u></p> <ul style="list-style-type: none"><li>• Low magnitude increases in infectious disease possible from employment of workers from outside the region</li></ul>	<p>Same as Alternative 2, except decreased potential for water transport injury, reduction of hazardous contaminants in the air and surface water, and reduced impacts to subsistence fishing.</p>	<p>Same as Alternative 2, except decreased potential for water transport injury, reduction of hazardous contaminants in the air and water, and reduced impacts to subsistence fishing.</p>	<p>Same as Alternative 2, except increased potential for surface transport injury, increased air contaminants in the vicinity of the roadway, reduced impacts to subsistence fishing, and increased potential for terrestrial wildlife displacement.</p>	<p>Same as Alternative 2.</p>	<p>Same as Alternative 2.</p>

Table 3.19-9: Comparison of Impacts by Alternative\*

Impact- causing Project Component	Alt. 2 – Proposed Action	Alt. 3A – LNG-Powered Haul Trucks	Alt. 3B – Diesel Pipeline	Alt. 4 – BTC Port	Alt. 5A – Dry Stack Tailings	Alt. 6A – Dalzell Gorge Route
Summary Impact Conclusion	<p><u>Health Services Infrastructure and Capacity</u></p> <ul style="list-style-type: none"><li>In emergency situations, local health care facilities could be overwhelmed.</li></ul> <p><u>Water and Sanitation, Non-communicable and Chronic Diseases</u></p> <p>Unlikely to have impacts.</p> <p>Minor to Moderate, with Major beneficial income effects</p> <p>A concern for environmental justice is raised by disproportionate adverse impacts to minority or low-income communities.</p>	<p>Same as Alternative 2, but reduced fuel barging and impacts to subsistence fishing in the narrow reaches of the Kuskokwim River, small decreases in project employment and expenditures, decreased potential for water transport injury, and reduction of hazardous contaminants in the air and surface water.</p> <p>A concern for environmental justice is raised by disproportionate adverse impacts to minority or low-income communities.</p>	<p>Same as Alternative 2, but there would be additional job opportunities in Tyonek, potential low intensity adverse impacts to subsistence harvest of marine mammals near Tyonek, decreased potential for water transport injury, and a reduction of hazardous contaminants in the air and water.</p> <p>A concern for environmental justice is raised by disproportionate adverse impacts to minority or low-income communities.</p>	<p>Same as Alternative 2, but there would be reduced impacts to subsistence fishing in the narrow reaches of the Kuskokwim River, possible increases in impacts to terrestrial mammals used in subsistence, reduced risks of water transportation injuries, and increased risks of surface transportation injuries.</p> <p>A concern for environmental justice is raised by disproportionate adverse impacts to minority or low-income communities.</p>	<p>Same as Alternative 2.</p> <p>A concern for environmental justice is raised by disproportionate adverse impacts to minority or low-income communities.</p>	<p>Same as Alternative 2, but a larger workforce and higher expenditures which may facilitate subsistence and healthcare access.</p> <p>A concern for environmental justice is raised by disproportionate adverse impacts to minority or low-income communities.</p>

Notes:

\* The No Action Alternative would have no new impacts to low income and minority communities.